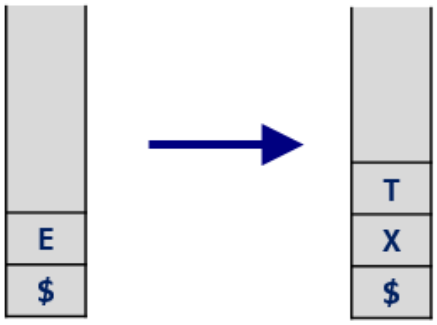
LECTURE 8 NOTES

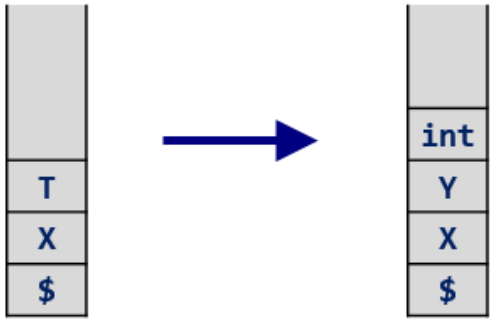
Slide 15

Stack	Input	Action	
E $	int * int $	T X	Replace
T X $	int * int $	int Y	Replace
int Y X $	int * int $	terminal	Pop then Advance
Y X $	* int $	* T	Replace
* T X $	* int $	terminal	Pop then Advance
T X $	int $	int Y	Replace
int Y X $	int $	terminal	Pop then Advance
Y X $	$	ε	Replace
X $	$	ε	Replace
$	$	ACCEPT	Pop Then End

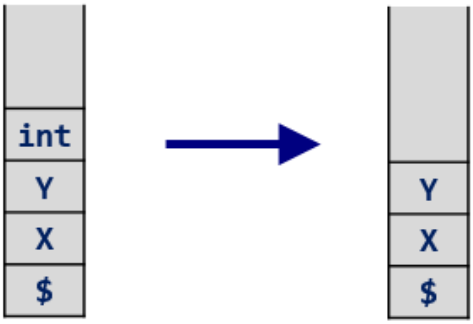
Step 1 Replace E with TX



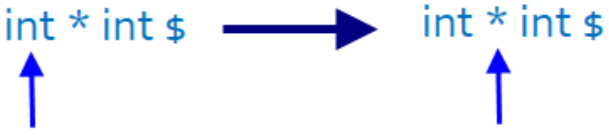
Step 2 Replace T with int Y



Step 3-A Pop int



Step 3-B Advance The pointer



FIRST & FOLLOWS

- Recall the grammar

$E \rightarrow T\,X$ $\qquad$ $X \rightarrow + E \mid \varepsilon$

$T \rightarrow (E) \mid \text{int}\,Y$ $\qquad$ $Y \rightarrow * T \mid \varepsilon$

- First sets

First(( ) = { (} $\qquad$ First(T) = {int, (}

First( )) = {) } $\qquad$ First(E) = {int, (}

First(int) = { int } $\qquad$ First(X) = {+, ε }

First(+) = { + } $\qquad$ First(Y) = {*, ε }

- Follow sets

Follow(+) = { int, (} $\qquad$ Follow(*) = { int, (}

Follow(( ) = { int, (} $\qquad$ Follow(E) = {), $}

Follow(X) = {$,) } $\qquad$ Follow(T) = {+,) , $}

Follow( )) = {+,) , $} $\qquad$ Follow(Y) = {+,) , $}

Follow(int) = {*, +,) , $}

NOTES

Follow(E) = {$,)} U Follow(X) $\qquad$ **| Follow(() = First(E)**

Follow(X) = Follow(E) = {$,)} $\qquad$ **| Follow()) = Follow(T)**

Follow(E) = {$,)} $\qquad$ **| Follow(*) = First(T)**

Follow(T) = First(X) U Follow(E) $\qquad$ **| Follow(+) = First(E)**

Follow(Y) = Follow(T) $\qquad$ **| Follow(int) = First(Y) U Follow(E)**

LL(1) TABLE CONSTRUCTION

1. **The parsing table consists of rows (labeled by the non-terminals) and columns (labeled by the terminals and $).**
2. **For each grammar rule of the form A → α fill in the cells of row A and column First(A) with α.**
3. **For Є grammar rule of the form A → Є fill in the cell of row A and column Follow(A) with Є.**